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ABSTRACT

This symposium is comprised of three papers on competencies in human resource development (HRD). "The Development of a Competency Model and Assessment Instrument for Public Sector Leadership and Management Development" (Sharon S. Naquin, Elwood F. Holton III) reports on a streamlined methodology and process used to develop a competency model for management development in the public sector. "Competencies of the Distance Education Professional: Self-Assessment and Authentication Measures to Document Learning" (Kim E. Dooley, James R. Lindner, Larry M. Dooley) describes a study to document growth in distance education core competencies of professionals in Costa Rica. It presents these results: individual and average growth in core competencies, comparisons of authenticated distance education competency scores to self-assessment scores, and comparisons based upon personal characteristics. "HRD Competencies for Effective Performance in a Knowledge-Based Economy (KBE): A Study of HRD Professionals in Singapore" (A. Ahad M. Osman-Gani) presents findings on the competencies and appropriate training and development strategies to develop them. It reports these findings: most respondents associated KBE with knowledge management, lifelong learning, and intellectual assets; and on-the-job training was considered the most effective training delivery method. All papers contained substantial references. (YLB)

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# 2002 AHRD Conference

# Competencies in HRD

## Symposium 6

Honolulu, Hawaii

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# The Development of a Competency Model and Assessment Instrument for Public Sector Leadership and Management Development

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***Traditional job analysis methods used for competency model development can be quite costly and time-consuming. This paper reports on a streamlined methodology and process used to develop a competency model for management development in the public sector. The streamlined methodology for developing the competency model and assessment instrument is fully explicated so that other governmental agencies or organizational entities electing to adopt a validated competency framework might learn from our experiences. The final instrument is also provided should other organizations choose to adopt or modify the model.***

Keywords: Instrument Development, Leadership Development, Competency Models

To be competitive in today's results-driven society, both private organizations and governmental entities must build and develop intellectual and knowledge capital. A competent workforce can have a significant impact on the effectiveness and efficiency of an organization. In fact, well-trained, competent workers are critical to the success of any [public or private sector] entity (Snell & Dean, 1992). Employees' ability to integrate their knowledge and skills with the core business processes provides the competitive advantage required in today's workplace (Prahalad & Hamel, 1990).

Organizations are increasingly turning toward competency-based programs to meet the demands of today's knowledge-based economy. According to Hamel and Prahalad (1994), competence represents the synthesis of a variety of skills, technologies, and knowledge streams. A competency-based approach to employee development ensures that all training programs are integrated to produce the desired results. One of the primary reasons for the increased level of competency-based program usage is that these programs can easily assimilate learning activities or initiatives into the daily business processes, rather than traditional training which is often totally isolated from daily business operations. Green (1999) summarized their value by stating, "robust competencies help you define what was done, what is being done, and what needs to be done" (p. 8).

Competency-based training programs are also referred to as skill-based or performance-based training programs. Such programs focus on employees' ability to demonstrate capability. According to Hamel and Prahalad (1994), competence represents the synthesis of a variety of skills, technologies and knowledge streams. A competency-based approach to employee development ensures that all training programs are integrated to produce the desired results. One of the primary reasons for the increased level of competency-based program usages is that these programs can easily assimilate learning activities or initiatives into the daily business process, rather than traditional training which is often totally isolated from daily business operations. Green (1999) summarized their value by stating, "robust competencies help you define what was done, what is being done, and what needs to be done" (p.8).

Characteristics of competency-based training programs include the following (Burger, 1975; Dunn & Mitchell, 1979; Leonard & Utz, 1974; Tromley, 1998).

1. Employees' knowledge and skills are certified through competency-testing rather than credits [courses] taken.
2. Competency-based training is centered on behaviorally stated and measurable objectives.
3. Trainee assessment or evaluation of learning is criterion-referenced rather than norm-referenced.
4. Assessments can take the form of written exams, oral exams, or skill practice demonstrations.
5. In the event of failure, trainees have an opportunity to retake competency-based tests.
6. Trainees receive immediate feedback on assessments.
7. Various forms of media are used in the instructional process to meet trainees' individual learning needs.

Job analysis is typically the first component or step in the process of developing competency-based training. Job analysis identifies the specific tasks that are required. The second step requires identification of the skills necessary to perform each task identified. The criteria for the competency evaluation are based upon these skills. The evaluation criteria clarifies what should be measured or the level at which an employee should demonstrate a

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competency. Assessment instruments are a key element in this process. The assessment instrument can be used to identify both individual and group level skill gaps. Specific training initiatives can be developed and implemented to target these skills gaps. Employees begin the process of training and testing until they reach the desired level of competency.

However, job analysis can be a lengthy and complex process, especially when applied to managerial positions. The challenge is often to find an economical approach that retains the integrity of job analysis without the enormous expense. The focus and purpose of this paper is to report on the methodology and process used so that other governmental agencies or organizational entities electing to adopt a validated competency framework might learn from these experiences. The streamlined process of developing the competency model and assessment instrument is fully explicated. And the instrument is provided should other organizations choose to adopt or modify the model.

*The Project*

Studies show that in both public and private sectors, organizations led by individuals who demonstrate effective leadership competencies are able to maintain competitive advantage. A competency-based model of sustainable competitive advantage designed by Lado, Boyd & Wright (1992) strongly emphasizes managerial competencies and their impact on the focus and success of the organization. Thus, it is understandable that managerial and supervisory training initiatives have become commonplace in business and industry. Trend setting organizations go to great expense to identify their strategic goals and instill the required leadership/managerial competencies (NAPA, 1997).

The State of Louisiana approached the Louisiana State University School of Human Resource Education and Workforce Development with a request to redesign and restructuring of their management development programs and processes. The primary goal was the desire to incorporate key performance drivers that were based on a set of core competencies with training initiatives, thereby improving the quality and efficiency of state operations. To accomplish this, the project had to link best practices and meet individual and agency needs for training at both fundamental and intermediate levels.

This time consuming effort resulted in a fully implemented an integrated system of supervisory and managerial training that is competency-based and designed to promote best practices throughout the state. The result is a training program that seeks to transform learning experiences into performance-based outcomes. To accomplish this result, the project team had to first identify all competencies required for state managers and supervisors and develop an effective assessment instrument to measure those competencies.

Due to the enormous scope of this project, the work was conducted in phases. The dynamic process was a four-phase process consisting of competency model development; needs assessment; curriculum development; and course design and pilot delivery. This paper, however, will focus only on the first two phases of the project as they serve as the underlying foundation for the success of the entire project. These phases are the competency model development phase and the needs assessment phase.

*Phase 1: Competency Model Development*

The development and integration of competencies in an organization is a process that requires systems thinking and strategic planning. True competency-based systems are cyclical, built around a series of well-defined tasks. It is therefore understandable that this phase, competency model development, involves a multi-step process.

*Step 1.1: Beginning with the U.S. Office of Personnel Management managerial competency model* -- The process began with an extensive search of managerial competency models that met two basic criteria. The first criterion was that the model had to be well-validated using accepted competency model validation techniques. It turned out that quite a few of the popular models did not meet this criterion. Second, the competency model had to be validated for use in the public sector. After an extensive search, it was determined that the model developed by the U.S. government was the one best suited for use in Louisiana.

More specifically, the model used was the Leadership Effectiveness Framework developed by the U.S. Office of Personnel Management (OPM) Personnel Management Center, and was available free of charge. In 1991, OPM developed the Leadership Effectiveness Survey (LES), "an empirically-based continuum of individual and organizational competencies that are important for effective performance by supervisors, managers and executives" (Eyde, Gregory, Muldrow, & Mergen, 1999). The research basis for this project included a comprehensive review of public and private sector literature (Corts & Gowing, 1992). The development of the LES was based upon information obtained in this literature review. This instrument was administered to a stratified random sample of approximately 10,000 Federal executives, managers, and supervisors (Gregory & Park, 1992). Information obtained from the survey enabled the identification of competency requirements across the three employment levels --

supervisory, managerial, and executive, which ultimately led to the development of the OPM competency model, the Leadership Effectiveness Framework (LEF) (Gregory & Park) (Eyde, Gregory, Muldrow, & Mergen, 1999).

*Step 1.2: Customizing language for Louisiana State work environment* – The next step was to adapt the language of the task statements used to construct the U.S. competency model. The team of experts from the University and the State spent many days analyzing the language (i.e., stakeholders, work groups, etc.) and making changes where necessary while being careful not to violate the integrity of the original model. The outcome of this process step was the initial version of the Louisiana Managerial/Supervisory Survey LMSS instrument.

*Step 1.3: Pilot testing and validation* – The resulting competency statements were field tested in focus groups with nine different departments in Louisiana state government. Each focus group included 15 - 25 members, representing a cross-section of managerial levels. These participants were selected by departmental level mid- and upper-level management in conjunction with the project team members. The following criteria were used in the selection process:

1. Employees selected had to be considered high performers within their work groups.
2. Employees selected had to be able to clearly distinguish between the technical competencies (the what) and the performance competencies (the how) of their jobs.
3. Employees selected had to be able to articulate the necessary KSAs for managerial and supervisory positions.

These supervisors and managers were given an opportunity to critique the writing as well as the content of the competencies in these all day meetings. After carefully reviewing the wording and content of each existing statement, the focus group participants were also asked the following questions:

1. Do you think that these competency statements are representative of the tasks that state supervisors and managers must perform?
2. Are there competency statements included on this list that should be eliminated?
3. Are there competency statements that should be added to this list?

Their suggestions and comments were compiled, sorted and reviewed by the project team members. The approved revisions were integrated into a revised version of the LMSS instrument. This instrument was comprised of 24 competencies, each with series 311 task statements or sub-competencies that described an element of managerial behavior from basic to strategic levels.

*Step 1.4: Developing alternate versions of the LMSS* – Once the core LMSS model had been developed, its value was leveraged by developing specialized versions of the instrument. Because there was the basic competency model to start with, it was relatively easy to develop versions that were more focused to special situations in state government, further enhancing the value of this project. For example, versions were developed for first line supervisors in the Department of Transportation and Development and the Department of Health and Hospitals. Additionally, the basic version was used as a starting point to create a new supervisory competency model for Department of Corrections supervisors. This model is being recognized nationally for its innovativeness. Using job analysis data from the needs assessments, departments have the option of developing their own customized version of the LMSS instrument.

*Step 1.5: New competency identification* – Through the two-year test period it became apparent that some additional competencies were needed. In particular, the State had initiatives in areas such as strategic management, customer service, and reengineering. Thus, new competencies were needed to achieve the strategic goals of the State. For example, in the general LMSS competencies related to process management, improvement and redesign were added. In addition, the first line supervisor version needed competencies related to safety and "caretaker" roles. Focus groups and survey methodology were used to collect data for this task.

*Step 1.6: Develop other administration formats* – The model and assessment tool have been adapted for a variety of administration formats (i.e., self-rating, dual rating, 360 degree rating). This enhances supervisors' and employees' abilities to set performance improvement goals. Employee participation increases buy-in and enhances commitment to achieving performance goals. Dual rating (employee and his/her supervisor) and 360-degree feedback (employee, supervisor, peers, and subordinates) versions allow for more complete assessment, particularly for individual development and coaching. The 360-degree version (see Appendix A -- Other variations may be obtained by contacting the authors) and the dual rating version enable the employee to actively participate in seeking supervisor feedback and assessing past performance. Self-scoring versions have been developed so that departments and agencies can use it without the University's assistance. The competencies are also being adapted for pre- and post-training assessments and for Internet administration.



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*Phase 2: Training Needs Assessment in Nine State Agencies*

The initial competency model was field tested in needs assessments conducted in nine Louisiana state government agencies over a two-year period. Due to space limitations, this phase is not discussed in detail but has been partially documented elsewhere (Holton, Bates, & Naquin, 2000). Briefly, for three years extensive training needs assessments were conducted in eleven departments within Louisiana government. They encompassed a wide variety of training needs and job types. However, most departments identified managerial and supervisory training as a key need. As a result, resources could be pooled and the work described in this article undertaken.

Over 5,000 managers completed the revised survey instrument that asked their individual perceptions of both skill level and job importance of the 24 competencies. The later scale gave the state the most complete job analysis data on government managers it had ever had. In addition, six of the agencies elected to conduct multi-rater needs assessment in which each individual manager and his or her boss completed the instrument.

Survey data was summarized on both state and agency levels. Each participating agency received summary reports documenting their training needs. The agency level data was retained for development of customized versions of the instrument and curriculum. The state level data was used to refine and validate the LMSS instrument.

**Importance of This Research Project**

This project represents a very important step in the re-creation of management development programs in state government. To achieve high-performance, private sector businesses and state governments must closely examine their management and leadership competency models and development processes. Doing so provides both individual and organizational level benefits. Both the project team and the State recognized the potential organizational and individual level benefits of this competency model. The organizational level benefits of the LMSS instrument included:

- It aligned work behaviors with organizational goals.
- It served as a means to allow departments to communicate desired work behaviors.
- It helped to create an awareness of performance expectations.
- It identified and emphasized work behaviors that contribute to organizational effectiveness.
- It identified training areas that are compatible with organizational strategies.
- It can be used to increase the competency level of the supervisory and managerial level workforce.
- It can be used to provide ongoing skill development and career enhancement opportunities.
- It enables customizing workforce development systems to ensure that departmental and agency employees have the necessary KSAs.
- It enables departments to create knowledge workers by developing skills in core competencies.
- It can be used to improve performance through structured performance discussions.
- It can be used to design succession-planning strategies.
- It can be use to design career development opportunities.

There are individual level benefits of the LMSS in addition to the organizational level benefits. These include:

- Ability to create an individual development plan for professional growth.
- Ability to receive feedback from superiors, peers, and subordinates if the 360 version is used.
- Dual rating version allows individual employees to gauge their performance against their superiors' rating to determine gaps in perception.
- Ability to receive individualized assessment of management and supervisory competencies.
- Ability to assess potential for advancement.
- Increase level of understanding of the relationship between personal behaviors and organizational goals and strategies.
- Helps individuals identify the competencies they must develop to advance in state culture.
- Increase awareness of individual strengths and weaknesses.

There is also an important ancillary benefit of this project, which perhaps is the most important benefit here. That benefit is the process that was developed that any other state or business entity can use to re-create its management and leadership development programs.

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## APPENDIX - LMSS 360° RATING SURVEY

***Directions:** As you read each managerial/leadership competency, think about the current job of individual that you are rating, and make two ratings. Rate his/her current level of skill and how important that competency is to his/her job. Use the scales provided below to make your best estimates.*

**MARK YOUR ANSWERS ON THE SEPARATE ANSWER SHEET PROVIDED**

**SKILL LEVEL**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| *None* | *Low* | *Moderate* | *Considerable* | *Very High* |

**IMPORTANCE TO THE JOB**

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| *None* | *Low* | *Moderate* | *Considerable* | *Very High* |

**NOT APPLICABLE - Mark if skill is not applicable at all to the job.**

**DON'T KNOW – Mark if you do not know have enough information about the job or individual to respond to this item.**

**ORAL COMMUNICATION**

1. Communicates ideas and facts verbally in a clear and organized way.
2. Adjusts style, tone, and level of verbal communication to fit the audience and situation.
3. Listens to others and shows understanding of what they are saying.
4. Anticipates the implications of words and actions inside and outside of the workgroup.

**WRITTEN COMMUNICATION**

5. Communicates ideas and facts in writing in a clear and organized manner.
6. Adjusts style, tone, length, and level of written communication to fit the audience and situation.
7. Reviews and critiques others» writing in a constructive way.

**NEGOTIATING**

8. Identifies and understands interests and positions of others (e.g., co-workers, citizens, customers).
9. Applies appropriate negotiation approaches to find mutually acceptable solutions to problems or conflicts.
10. Persuades others to commit to action when appropriate.
11. Gains cooperation from others to get information and to accomplish department/office goals.

**PARTNERING**

12. Builds productive working relationships with key individuals and groups.
13. Works with a variety of individuals and groups from both within and outside the department/office.
14. Identifies concerns of other interested parties (e.g., program users, community, stakeholders, etc.) to find common ground.
15. Works to overcome barriers to partnering.

**INTERPERSONAL SKILLS**

16. Provides positive feedback in a way that reinforces or encourages desirable employee behavior.
17. Considers and responds appropriately to the needs, feelings, and capabilities of all individuals.
18. Provides negative feedback constructively.
19. Treats all individuals with sensitivity and respect.

**ACCOUNTABILITY**

20. Takes personal responsibility for work products and services of his/her group.
21. Assures that his/her workgroup»s results are measured.
22. Tracks results of programs or activities and takes corrective action when necessary.
23. Encourages subordinates to take responsibility for work products and services.

**PROBLEM SOLVING**

24. Recognizes and defines problems and issues.
25. Gathers enough relevant data about problems and issues to conduct a complete analysis.
26. Uses appropriate methods to analyze and interpret data.
27. Generates multiple solutions based on data analysis.
28. Recommends appropriate solutions to problems.

**DECISIVENESS**

29. Acts decisively when quick action is required, even in uncertain situations.
30. Makes difficult or unpopular decisions when necessary.
31. Exercises good judgement by making sound and well-informed decisions.
32. Considers all factors when making decisions (e.g., legal aspects, political implications, organizational culture, media, special interests).



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**CUSTOMER SERVICE**

33. Identifies customers/clients and other interested parties (e.g., program users, community, stakeholders, etc.).
34. Establishes and uses feedback systems to understand customer/client expectations.
35. Integrates customer/client needs and expectations into development and delivery of services.
36. Improves the quality of services, products, and processes on an ongoing basis.

**PERSONAL JOB EXPERTISE**

37. Demonstrates sufficient technical knowledge of the program in daily work responsibilities.
38. Applies procedures, regulations, and policies related to program implementation.
39. Understands job expertise needed by subordinates to do their work.

**FINANCIAL MANAGEMENT**

40. Prepares budget or provides budget input for own area of responsibility.
41. Demonstrates an understanding of the roles of the department/office, Division of Administration, and the legislature in the budget process.
42. Explains or justifies budget requests.
43. Monitors budgets to ensure cost -effective resource use.
44. Makes sound decisions on procurement of equipment, supplies, or services.
45. Demonstrates an understanding of state and department/office procurement regulations.
46. Monitors performance of contractors.

**HUMAN RESOURCE MANAGEMENT**

47. Anticipates impact of possible changes in staff (e.g., retirement, expertise, T.O.).
48. Takes an active role in recruiting and retaining staff.
49. Provides opportunities for employee orientation, training, and development.
50. Sets performance expectations for subordinates and gives timely feedback about progress.
51. Assesses employee performance and conducts constructive performance reviews.
52. Develops others through coaching and mentoring.
53. Recognizes achievement of performance expectations.
54. Takes appropriate corrective actions with employees.
55. Supports activities that address employee well-being (e.g., safety, health, wellness).

**TECHNOLOGY MANAGEMENT**

56. Makes maximum use of available information technology to improve the workgroup=s effectiveness.
57. Ensures subordinates are trained and capable in computer applications useful in their job.
58. Anticipates changes in technology that will improve workgroup performance.

**ADAPTABILITY**

59. Responds constructively to change and setbacks.
60. Maintains a professional demeanor in stressful or difficult situations.
61. Modifies behavior and work methods in response to new information, changing conditions, or unexpected obstacles.
62. Remains open to new ideas and approaches.
63. Works on a number of different projects without losing focus.
64. Adjusts as quickly as possible to new situations that need attention.

**MOTIVATION TO SERVE**

65. Encourages employees to believe in the spirit of public service.
66. Creates and supports a climate that encourages employees to provide quality public service.
67. Demonstrates a personal commitment to quality public service.

**CONFLICT MANAGEMENT**

68. Manages or resolves conflicts, confrontations, and disagreements in an appropriate manner.
69. Takes steps to prevent destructive conflict situations.
70. Seeks to resolve formal and informal complaints related to the workgroup =s responsibilities.
71. Proactively manages conflict resulting from organizational change.

**DIVERSITY AWARENESS**

72. Recognizes the value of individual differences at all levels of the organization.
73. Creates a climate in which everyone is respected and recognized for their contributions.
74. Provides employment and development opportunities to support a diverse workforce.

**WORKGROUP TEAM BUILDING**

75. Delegates authority with responsibility.
76. Coaches, motivates, and guides others toward goals and accomplishments.
77. Encourages cooperation and teamwork within the department, office, and workgroup.
78. Supports group problem-solving, and participative decision-making.
79. Builds trust and open communication among team members.
80. Seeks consensus among diverse viewpoints to build commitment (buy-in).



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**INTEGRITY/HONESTY**

81. Models and encourages high standards of honesty and integrity.
82. Promotes ethical practices in all organizational activities.
83. Applies department/office policies in a consistent manner.
84. Demonstrates consistency between words and actions.
85. Exercises power, authority, and influence appropriately to achieve department/office goals.

**PLANNING/GOAL SETTING**

86. Creates a direction for the workgroup that fits with department=s vision.
87. Motivates employees at all levels to work toward the department=s goals, values, and strategies.
88. Recommends changes based upon a strategic plan for the workgroup.
89. Initiates changes within the scope of the job that are based upon a strategic plan for the workgroup.

**EXTERNAL AWARENESS**

90. Keeps current with laws, regulations, policies, trends, and other developments that impact the workgroup.
91. Keeps current with general trends and developments that impact the department/office.
92. Analyzes and applies Alessons learned@ from other organizations to improve workgroup results.

**INNOVATION**

93. Identifies need for new approaches, services, and capabilities.
94. Designs new approaches, services, and capabilities to meet identified needs.
95. Takes necessary action to implement new approaches, services, and capabilities.
96. Designs/implements new approaches to improve workgroup effectiveness.
97. Creates a work environment that encourages and recognizes creativity and innovation.
98. Recommends innovative or cutting edge programs and processes.

**LONG - RANGE THINKING**

99. Recommends effective strategies that fit the external environment which the department/office faces.
100. Applies a long-term perspective when developing strategic plans.
101. Develops goals, objectives, and strategies that fit with the department/office=s long-term vision.
102. Adjusts strategic plans in response to changes inside and outside the department.

**CONTINUAL LEARNING**

103. Evaluates personal strengths and weaknesses, and assesses their impact on others.
104. Seeks feedback from others and uses it for self-improvement.
105. Invests time and energy in self-development and professional growth.
106. Creates an environment where learning and developing new skills is part of day-to-day work.
107. Develops and implements methods to share knowledge with others who need it.

**A Definition of Work Process** - *A particular method of doing something, generally involving a number of steps or operations and often including multiple jobs. A process may well extend across workgroups and departments. For example, an application process might begin with paperwork submitted by a citizen, which is then routed through multiple people, possibly in different offices, for various checks and actions before being approved.*

**WORK PROCESS MANAGEMENT**

108. Manages and plans work as a process rather than focusing only on individual jobs.
109. Defines goals for each work process that they control.
110. Measures and monitors outputs of work processes.
111. Manages work that flows between people and other workgroups.
112. Designs work processes to meet the needs of "customers" of the workgroup.

**WORK PROCESS IMPROVEMENT**

113. Uses work process performance measures to identify problems.
114. Eliminates work steps that do not add value to the desired outcomes.
115. Changes work processes when a new approach appears to be better.
116. Works to insure that work processes are as simple as possible.
117. Evaluates process performance regularly to determine if changes are needed.
118. Uses process analysis tools (e.g., flowcharts, fishbone diagrams, etc.) to identify and correct problems.

**WORK PROCESS REDESIGN**

119. Redesigns work processes and procedures when a total change is necessary.
120. Discards old methods of doing things when they no longer work.
121. Evaluates new approaches to work processes continuously.
122. Makes sound decisions about which processes to redesign instead of just improve.
123. Creates a sound rationale for process redesign projects.



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# Competencies of the Distance Education Professional: Self-Assessment and Authentication Measures to Document Learning

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***This study used a self-assessment instrument and authentication measures to document growth in distance education core competencies of professionals in Costa Rica. The results include: individual and average growth in core competencies, comparisons of authenticated distance education competency scores to self-assessment scores, and comparisons based upon personal characteristics.***

Keywords: Training Competencies, Distance Education, Latin America

Competency modeling has emerged as an important human resource development tool and is being widely used in public and private sectors. Professionals have used competency models to "clarify organization-specific competencies to improve human performance and unify individual capabilities with organizational core competencies" (Rothwell & Lindhom, 1999, p. 104). Organizations provide training so that individuals will become more competent and therefore, more effective in their jobs. It is often assumed that training provides the condition for effective learning, however, "from the individual's perspective, training cannot be assumed to produce learning, nor that learning is always an integral part of training" (Antonacoupoulou, 1999, p. 17).

Transfer of learning and the ability to measure learning outcomes as a result of a training program have become major issues in training and development (Antonacoupoulou, 1999; Kellie, 1999; Smith, 1999). "Currently, the individual's perspective is relatively under-researched, thus much remains unclear about the way individuals perceive the association between training and learning and more significantly whether individuals actually learn from training" (Antonacopoulou, 1999, p.14).

Burchell and Westmoreland (1999) discuss Tomlinson's (1995) interactive model of competence between three interrelated aspects—performance, schema and intellectual processes, located within a particular cultural context. "The schema represents the student's way of thinking about the role and its constituent elements, and signals what will be attended to and valued in the development of practice" (Burchell & Westmoreland, 1999, p. 157). This framework has three functions: 1) *assessment* (both formative and summative), 2) *development* (providing a map and strategies based upon the formative self-assessment and reflective participation in the process of learning, thus providing a basis for self-management of learning, and 3) *communication and reflection* concerning the development and assessment for competence analysis.

Often formative and summative self-assessment instruments are used to determine work roles, outputs and competencies. Other researchers have considered competency identification, modeling, and assessment in Australia, Ireland, the United States, England, the Netherlands, Italy, Germany and Finland (Lindner & Dooley, 2001; O'Brien & Thompson, 1999; Rothwell & Lindholm, 1999; Smith, 1999; Valkeavaara, 1998). These research studies did not include Latin America or Spanish speaking countries, nor were they based upon the core competencies for the distance education professional. This study, therefore, adds to the growing body of literature on using self-assessment instruments to measure perceived growth (learning) in competency-based training programs. It is unique in providing authentication measures to compare self-assessment to evaluation rubrics of observable skills. It was also necessary to determine if the self-assessment instrument would transfer in a cross-national training situation, with simultaneous translation and training materials based upon research and practice in North America.

## Theoretical Framework

Rothwell & Lindholm (1999) warn against the ambiguity of terms and definitions. It is important to clarify terminology as we consider the theoretical framework for this study. Knowledge is a body of information applied directly to the performance of a given activity. Skill is a present, observable competence to perform a learned psychomotor act. Ability is a present competence to perform an observable behavior or a behavior that results in an observable product. Competencies, therefore, establish the behavior requirements needed to be successful in a given

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profession or task. Buford and Lindner (2002) define competencies as a group of related knowledge, skills, and abilities that affect a major part of an activity. Competency models can be used: as a recruitment and selection tool; as an assessment tool; as a tool to develop curricula and other training material; as a coaching, counseling, and mentoring tool; as a career development tool; and as a behavioral requirement benchmarking tool (Yeung, Woolcock & Sullivan, 1996).

Based on a competency model developed by the American Society for Training and Development (ASTD), Thach and Murphy (1995) identified roles, outputs, and competencies of distance learning professionals within the United States and Canada. Their top ten competencies portray the dual importance of both communication and technical skills in distance learning. These competencies in rank order were: 1) Interpersonal Communication, 2) Planning, 3) Collaboration/Teamwork, 4) English Proficiency, 5) Writing, 6) Organizational, 7) Feedback, 8) Knowledge of the Distance Learning Field, 9) Basic Technology Knowledge, and 10) Technology Access Knowledge. Williams (2000) replicated this study with similar results. Others have built complete Masters degree programs (Ally & Coldeway, 1999) and Certificate Programs (CDLR, 2001) to provide the coursework or professional development (competence) to work in the growing field of distance education.

Determining, measuring and verifying competencies needed for a given profession are difficult but necessary tasks. HRD professionals are continuously seeking appropriate techniques to document professional growth and learning over time. One method for addressing this problem is to develop and use competency-based and behaviorally anchored rating scales to measure growth. In this study, behavioral anchors are defined as characteristics of core competencies associated with the mastery of content. Competency-based behavioral anchors are defined as performance capabilities needed to demonstrate knowledge, skill, and ability (competency) acquisition. Competency-based behavioral anchors require considerable time and effort to develop, however, they provide more accurate judgments than item-based scales (Buford & Lindner, 2002). Further, such anchors provide trainers and other expert raters with behavioral information useful in providing assessments and feedback to learners. Such information can help learners understand their unique bundles of competencies and increase satisfaction, motivation, learning, and ultimately success on the job (Drawbaugh, 1972). Competency-based feedback can provide a foundation for individual learning plans. Behavioral anchors can also be used to describe minimally acceptable knowledge, skills, and abilities on identified core competencies, thus, giving managers tools and information needed to improve curricula, training materials, evaluation processes, and instructional delivery methods.

**Research Questions and Propositions**

The purpose of this descriptive study was to authenticate growth (learning) in distance education core competencies of adult professionals who participated in a training and development program in Costa Rica. The study further sought to replicate the use of competency-based behavioral anchors, developed by Dooley and Lindner (2001), as an expert authentication tool for documentation of growth in distance education core competencies. The research questions were: 1) How much perceived growth did learners report in the self-assessment instrument (behavioral anchored scores) for distance education core competencies as a result of participation in the training program? 2) How did the self-assessment instrument (behavioral anchored scores) compare to the authenticated distance education competency scores determined by the trainer using an evaluation rubric? 3) Were there differences in growth based upon personal characteristics (gender, age, years as a trainer/educator, and years of experience in distance education)?

**Methodology**

The context for this study was a 5-day training program sponsored by the Inter-American Institute for Cooperation in Agriculture (IICA) headquartered in Coronado, Costa Rica. The training program, including all written and oral communications were delivered using simultaneous translation (English and Spanish) at IICA's Center for Distance Training in an interactive video classroom with desktop computers available in a lab format.

There were 28 respondents who were professionals in various fields including health care, engineering, social service, local government, and human resource management. Participants were enrolled in a continuing education course, *Course Design for the Digital Age: Instructional Design and Materials Conversion*. There were 13 female and 15 male participants, most with no previous distance education experience. Respondents were coded based upon gender (F/M), age (1=less than 30, 2=30-39, 3=40-49, 4=50-59), years of experience as a trainer/educator (0=0, 1=1-5, 2=6 or more), years of experience in distance education (0=0, 1=1-3, 2=4 or more), and a one to two letter unique identifier to determine any trends in the data, but still provide confidentiality.

The content for the training program was developed based upon the competencies for the distance education professional (Thach & Murphy, 1995). The researchers clustered the distance education competencies into six major themes or "core" competencies needed by practitioners (See Figure 1).

*Figure 1. Core Competency Behavioral Anchors*

| Core Competency | Behavioral Anchors |
|---|---|
| Adult Learning Theory | • Philosophy of Teaching<br>• Adult Learner Characteristics<br>• Learning Styles |
| Technological Knowledge | • Web Development Tools<br>• Videoconferencing<br>• Computer Hardware/Software<br>• Communication Tools (e-mail, threaded discussion) |
| Instructional Design | • Course Planning and Organization<br>• Gaining Attention<br>• Writing Instructional Objectives<br>• Active Learning Strategies<br>• Evaluation |
| Communication Skills | • "Presenting" Content<br>• Questioning and Facilitation<br>• Feedback<br>• Collaboration/Teamwork |
| Graphic Design | • Formatting Visuals for TV Display<br>• Design Considerations for Web-pages<br>• Multimedia Components |
| Administrative Issues | • Support Services<br>• Copyright/Intellectual Property<br>• Technology Access<br>• Financial Considerations |

The self-assessment instrument was developed by Dooley and Lindner (2001) and has been found to be valid and reliable. The instrument was used as a tool for the trainees to measure growth (learning) in the six core competencies. The researchers chose a stair-step approach (rather than a continuum or Likert scale) to visually represent progression from novice (0) to expert (7). The numbers were intended to measure perceived growth rather than any statistical significance.

Participants were given the instrument the first day of the training program and again after completion of the program. Respondents provided open-ended verification of the numerical ratings along the side of each core competency "step" at both viewings of the self-assessment instrument. An example of verification was included in the instructions. Participants were also asked to describe any attitudinal changes as a result of participation in the training at the completion of the program. A professional translator hired by IICA translated the instrument into Spanish.

The researchers used competency-based behavioral anchors at level 2, 4, and 6 and trainees' written verifications to authenticate ratings (Dooley & Lindner, 2001; Smith & Kendall, 1963). A person with a score of seven demonstrates expertise in the core competency area. A person with a score of four would be considered average and a score of one would be novice. Additionally, an assessment rubric was used to evaluate training participants on the last day as they presented a lesson delivered using interactive video equipment. The rubric served as an authentic assessment tool to document demonstrated competence in the core competency areas. Trainees were evaluated on eight constructs using a five-point scale. Summing scores and multiplying by 2.5 to convert to 100-points calculated a weighted final score.

**Results and Findings**

The results of this study were reported in four areas: (1) individual behavioral anchored scores and total growth in core competencies, (2) individual authenticated distance education score, (3) average distance education score by personal characteristics and, (4) authenticated growth by personal characteristics. h Table 1, the individual, average, and total growth is indicated for each of the six core competencies.



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Table 1. *Individual Behavioral Anchored Scores and Total Growth in Core Competencies (N=28)*

| | Adult Learning Theory | | Technology Knowledge | | Instructional Design | | Communi-cations Skill | | Graphic Design | | Administra-tive Issues | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code[a] | B[b] | A[c] | B[b] | A[c] | B[b] | A[c] | B[b] | A[c] | B[b] | A[c] | B[b] | A[c] | Total Growth |
| F110G | 3 | 5 | 3 | 5 | 1 | 5 | 2 | 5 | 2 | 4 | 5 | 6 | 14 |
| F200C | 3 | 4 | 1 | 3 | 3 | 5 | 2 | 4 | 1 | 4 | 3 | 5 | 12 |
| F200U | 1 | 6 | 2 | 5 | 1 | 6 | 1 | 6 | 1 | 6 | 2 | 6 | 27 |
| F200X | 1 | 3 | 2 | 5 | 1 | 3 | 2 | 4 | 2 | 5 | 3 | 5 | 14 |
| F201S | 1 | 3 | 4 | 5 | 1 | 3 | 2 | 3 | 3 | 4 | 2 | 3 | 8 |
| F202P | 1 | 5 | 3 | 5 | 1 | 4 | 2 | 5 | 1 | 3 | 1 | 5 | 18 |
| F211B | 2 | 4 | 1 | 3 | 4 | 6 | 3 | 5 | 1 | 5 | 1 | 3 | 14 |
| F211D | 1 | 5 | 1 | 5 | 1 | 5 | 1 | 4 | 1 | 5 | 4 | 6 | 21 |
| F300M | 1 | 5 | 2 | 7 | 1 | 5 | 3 | 7 | 1 | 5 | 2 | 5 | 24 |
| F301F | 1 | 7 | 1 | 7 | 1 | 7 | 1 | 7 | 1 | 7 | 2 | 7 | 35 |
| F301Z | 4 | 5 | 2 | 4 | 5 | 6 | 5 | 6 | 1 | 3 | 2 | 3 | 8 |
| F302K | 1 | 6 | 2 | 6 | 1 | 6 | 1 | 6 | 1 | 7 | 1 | 7 | 31 |
| F312L | 3 | 4 | 4 | 5 | 7 | 7 | 7 | 7 | 4 | 5 | 5 | 6 | 4 |
| M100N | 1 | 4 | 6 | 7 | 1 | 4 | 1 | 4 | 1 | 4 | 1 | 4 | 16 |
| M100W | 2 | 6 | 6 | 6 | 3 | 5 | 4 | 6 | 4 | 6 | 1 | 5 | 14 |
| M101E | 1 | 1 | 7 | 7 | 2 | 2 | 3 | 3 | 4 | 4 | 6 | 6 | 0 |
| M101O | 4 | 6 | 3 | 6 | 4 | 6 | 4 | 6 | 1 | 6 | 6 | 6 | 14 |
| M111J | 2 | 4 | 4 | 5 | 3 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 6 |
| M111T | 1 | 5 | 3 | 6 | 2 | 5 | 4 | 6 | 4 | 6 | 1 | 6 | 19 |
| M112Y | 1 | 3 | 6 | 7 | 2 | 5 | 5 | 6 | 6 | 7 | 2 | 5 | 11 |
| M212AB | 3 | 5 | 3 | 4 | 4 | 5 | 2 | 3 | 1 | 4 | 1 | 6 | 13 |
| M212Q | 1 | 5 | 5 | 7 | 1 | 5 | 5 | 6 | 5 | 6 | 7 | 7 | 12 |
| M222A | 7 | 7 | 3 | 3 | 7 | 7 | 5 | 5 | 1 | 1 | 1 | 1 | 0 |
| M322H | 3 | 6 | 7 | 7 | 3 | 7 | 3 | 7 | 7 | 7 | 4 | 7 | 14 |
| M400AA | 5 | 6 | 1 | 6 | 4 | 6 | 4 | 6 | 1 | 6 | 4 | 6 | 17 |
| M400V | 1 | 6 | 1 | 6 | 4 | 7 | 4 | 7 | 1 | 6 | 1 | 7 | 27 |
| M401I | 1 | 6 | 1 | 6 | 4 | 7 | 4 | 7 | 1 | 6 | 1 | 7 | 27 |
| M421R | 3 | 5 | 2 | 5 | 3 | 6 | 3 | 6 | 1 | 5 | 1 | 5 | 19 |
| Average | 2.1 | 4.9 | 3.1 | 5.5 | 2.7 | 5.4 | 3.1 | 5.4 | 2.3 | 5.1 | 2.7 | 5.4 | 15.7 |

Note: Respondent Code[a], 1st letter=gender, 1st number=Age, 2nd number=Years as educator, 3rd number=Years using distance education, 2nd letter=one or two letter unique identifyer; B[b]=Before; A[c]=After

Before the course, 24 of the 28 participants rated their level of competence in Adult Learning Theory below average; 18 trainees rated their competence above average after the course. The average Adult Learning Theory beginning score was 2.1 and finishing score was 4.9. The participants provided open-ended verification of their current core competency level. The researchers made authenticated assessments by comparing self-reported data with the competency-based behavioral anchors. One trainee that grew, from below average before the course to above average after the course, indicated that his instructional design team lacked knowledge in adult learning theory. As a result of the training program, he acquired the knowledge base necessary to incorporate adult learning theory into online training (M322H). Another participant who grew from novice to average indicated "I have learned new training methods and styles that will serve to further me along in my career" (M100N). Yet another participant who grew from average to above average already had previous education in adult learning theory and experience in training adult learners. This training program "refreshed her understanding of adult learning theory" (F301Z).

For Technology Knowledge, 19 rated their level of competence below average at the beginning of the training program and 23 rated their competence above average by the end. The average starting Technology Knowledge score was 3.1, and the ending was 5.5. One respondent who was below average at the start of the program and above afterwards stated that she knew "the basics on the use of videoconferencing equipment" but now has "more confidence in the equipment and how to act in front of it" (F302K). Another who was average before and above at the end stated that she was responsible for the "organization of a teleconference course directed at 550 persons at 22 centers" and by the end of the course she learned more interactive strategies to "permit me to use the course adequately" (F312L). A third participant who was a novice at the start and average by the end stated that she "only has e-mail to communicate internally at the institution" and now adds knowledge and skill on the use of videoconferencing (F211D). As a final example, a trainee who was already a "6" and grew to a "7" stated that "I have experience working with web equipment and tools but not as applied to education. What is left is applying it directly at the institution and seeing its results" (M112Y).

In the core competency area of Instructional Design, 19 participants were below average as they started the program and 23 were above average at the conclusion. The average change in score in Instructional Design was from a 2.7 to a 5.4 by the end of the training. A participant who was below average at the beginning of the training program and above afterward noted "I have planned a course (even though it's just a practice) with all the stages and I will take with me many new ideas for my institution" (F200C). Another who was already above average at the beginning and grew only slightly indicated that she had "prepared various training [materials] for different audiences and objectives with different formats" but now she has "learned the difference of preparing educational content, both traditional and at a distance" (F301Z).

Communication Skills had the fewest number of participants below average at the beginning of the program (16) and had 21 above average by the end. The average score in this area went from 3.1 to 5.4 over the course of the program. One participant who was below average at the beginning and above after training noted that she "understands the concepts and has applied them to her work" but now has "improved the use of communication" (F110G). Another noted that "after the course without a doubt I will make the presentations and ask the questions more according to the objectives" (F211B). One trainee who grew from a "2" to a "6" verified that "adaptation has not been easy...There are major considerations at a distance to make the videoconference more versatile and interactive" (M322H).

Graphic Design had 20 participants below average as they began the program and 19 above average at its completion. The average score changed from 2.3 to 5.1 from beginning to end. A respondent who was a novice at the beginning of the training replied, "I don't have experience with technology, only with audiovisuals, posters, transparencies, blackboard, and some video." She verified that she "advanced a lot on the preparation for TV material" (F301Z). Another began with some skill in the development of WebPages and PowerPoint presentations. By the completion of the training program she was able to "use and design materials for a videoconference" (F201S).

For the last core competency, Administrative Issues had 19 trainees below average at the start and 23 above average at the finish. The average growth changed from 2.7 to 5.4 as a result of attending the training. Many respondents mentioned new knowledge gained in the area of intellectual property and copyright (F312L, M100N, F211B, F211D). "After the course I will include in my presentations and creations some indication as to the author's rights, something I didn't realize for these cases" (F211B). Trainees' total growth ranged from 0 to 35: seven trainees had a growth between 0-11; nine had a growth between 12-14; five between 15-19; and seven between 20-35. The average total growth for a trainee was 15.7.

At the end of the training workshop, trainees developed and delivered a "lesson" via interactive video. The purpose of the activity was to synthesize and integrate the core competency areas and to demonstrate level of expertise. A rubric was used to evaluate trainees on the constructs delivered in the training program. As shown in Table 2, authenticated distance education competency scores and level of expertise results were calculated to document learning and professional growth. A result score (based upon the rubric) was assigned to each trainee to indicate their level of expertise and to identify areas needing further growth. For example, a rubric score of 95-100 would mean the participant demonstrated overall expertise and would be given a result score of 1. In contrast, a participant below a 70 on the rubric would demonstrate novice and receive a result score of 4.

At the end of the workshop, nine trainees demonstrated expertise or near expertise (result scores of 1-1.5). Five trainees demonstrated novice or near novice at the end (result scores 3.5-4.0). The researchers were also interested if personal characteristics or individual competency growth in the program was different by authenticated distance education scores (Table 3). Both males and females had equivalent distance education scores, however, females (17.7) had higher levels of overall growth than males (13.8). Younger trainees (39 and younger) had lower levels of individual growth (11.5-13.9) and demonstrated higher levels of expertise (85.3-86.3) than older trainees (40 and over) who had higher levels of growth (19.3-22.5) and lower levels of expertise (77.1-71.3). Distance education scores were similar based on years of experience as an educator or trainer. Participants with no experience as an educator demonstrated the highest levels of growth. Trainees with one to three years of distance education experience demonstrated higher levels of competence than those with four of more years of experience. Trainees who had the highest (20-35) and lowest (0-11) overall growth by score, demonstrated a higher need for overall growth and training (result scores of 3), than trainees that demonstrated growth from 12-19. Those that had the highest authenticated distance education score demonstrated the lowest levels of individual growth.

Table 2. *Individual Authenticated Distance Education Score (N=28)*

| Respondent Code[a] | Rubric Score[a] | Result[b] |
|---|---|---|
| F110G | 77.5 | 3 |
| F200C | 100.0 | 1 |
| F200U | 92.5 | 1.5 |
| F200X | 77.5 | 3 |
| F201S | 75.0 | 3 |
| F202P | 85.0 | 2 |
| F211B | 100.0 | 1 |
| F211D | 77.5 | 3 |
| F300M | 92.5 | 1.5 |
| F301F | 75.0 | 3 |
| F301Z | 65.0 | 4 |
| F302K | 85.0 | 2 |
| F312L | 75.0 | 3 |
| M100N | 85.0 | 2 |
| M100W | 85.0 | 2 |
| M101E | 90.0 | 1.5 |
| M101O | 90.0 | 1.5 |
| M111J | 70.0 | 3.5 |
| M111T | 92.5 | 1.5 |
| M112Y | 92.5 | 1.5 |
| M212AB | 85.0 | 2 |
| M212Q | 85.0 | 2 |
| M222A | 90.0 | 1.5 |
| M322H | 70.0 | 3.5 |
| M400AA | 75.0 | 3 |
| M400V | 67.5 | 4 |
| M401I | 67.5 | 4 |
| M421R | 75.0 | 3 |
| Average | 82.1 | 2.5 |

Note: Score[a]=Authenticated Distance Education Score Out of a Possible Score of 100; Result[b], 1=Demonstrates Expertise, 2=Suggests Growth in Particular Areas, 3=Suggests Overall Growth Needed, 4=Demonstrates Novice

**Conclusions, Recommendations, and Contributions to New Knowledge**

As we examine whether adults are learning as a result of training programs, there is a continued need to evaluate and authenticate growth. The findings of this study contribute to the body of literature related to assessing distance education competencies for adult learners within various organizations in Costa Rica and within a cross-national context. Although the researchers were native English speakers with education and training in the United States, the simultaneous translation of distance education competencies transferred effectively, demonstrated by multiple data sources and authentication measures. The self-assessment instrument and verifications were translated from Spanish to English for interpretations in this study. It is believed that the researchers adequately captured the essence of respondents' perceptions, although it is recognized as a limitation of the study. It is recommended that this model be replicated in other distance education training programs and cross-national settings to evaluate the extent the results presented here would be similar and applicable.

Although individuals' distance education competencies varied, results of this study showed that on average participants were below the average (4) at the beginning of the training program and above afterward. Participants increased approximately two steps in each of the core competency areas. At the end of the workshop, some trainees demonstrated expertise or near expertise (result scores of 1-1.5) while others were novice or near novice (result scores 3.5-4.0). While nearly all participants showed growth in distance education competence, there remains a need for specific training for some and overall training for others. The authenticated distance education score and result score provides outcome assessment measures useful for trainers and managers for comparing results of self-assessment and observable behaviors of competence.

Viewing the data by personal characteristics provided interesting discussion, and poses more questions for further research. It is understandable that younger trainees would have lower levels of individual growth and higher levels of expertise than older trainees due to the nature of the content delivered (distance education). Attitudinal issues would also come into play because of techno-phobia or lack of experience with technology in older participants. Additionally, participants with no experience as an educator demonstrated the highest levels of growth. What was surprising was that trainees with one to three years of distance education experience demonstrated higher levels of competence than those with four of more years of experience. This finding is incongruent with

expectations of years of experience and level of competence. In general, these individuals (F312L, M212Q, and M322H) indicated that they possessed above average levels of competence and showed the lowest levels of overall growth. The authenticated distance education scores and result scores refute the trainees self-assessment of their competence indicating that they may be more *confident* than *competent*.

Table 3. *Distance Education Score and Individual Growth by Personal Characteristics (N=28)*

| Gender | n | Rubric Score[a] | Result[b] | Growth[c] |
|---|---|---|---|---|
| Male | 15 | 81.3 | 2.5 | 13.8 |
| Female | 13 | 82.9 | 2.5 | 17.7 |
| **Age** | | | | |
| <30 | 8 | 85.3 | 2 | 11.5 |
| 30-39 | 10 | 86.3 | 2 | 13.9 |
| 40-49 | 6 | 77.1 | 3 | 19.3 |
| 50-59 | 4 | 71.3 | 3.5 | 22.5 |
| **Years as Educator** | | | | |
| 0 | 16 | 81.7 | 2.5 | 18.3 |
| 1-5 | 9 | 83.9 | 2.5 | 12.4 |
| 6 or more | 3 | 78.3 | 3 | 11.0 |
| **Years Experience With Distance Education** | | | | |
| 0 | 20 | 81.5 | 2.5 | 16.7 |
| 1-3 | 5 | 87.5 | 2 | 14.6 |
| 4 or more | 3 | 76.7 | 3 | 10.0 |
| **Growth** | | | | |
| 0-11 | 7 | 79.4 | 3 | |
| 12-14 | 9 | 85.6 | 2 | |
| 15-19 | 5 | 82.5 | 2.5 | |
| 20-35 | 7 | 79.6 | 3 | |

| Distance Education Score[a] | n | Growth[c] |
|---|---|---|
| 65-74 | 5 | 16.0 |
| 75-84 | 8 | 16.5 |
| 85-89 | 6 | 17.3 |
| 90-100 | 9 | 13.4 |

Note: Score[a]= Authenticated Distance Education Score Out of a Possible Score of 100; Result[b], 1=Demonstrates Expertise, 2=Suggests Growth in Particular Areas, 3=Suggests Overall Growth Needed, 4=Demonstrates Novice; Growth[c]=Authenticated Student Growth Based on Competency-Based Behavioral Anchors

Trainees who had the highest (20-35) and lowest (0-11) overall growth by score, demonstrated a higher need for overall growth and training (result scores of 3). Trainees who grew at the highest rates were unable to assimilate the entire competency set presented during the training program and therefore, had authenticated scores that suggested a continued need for training and development. As mentioned previously, authenticated scores of trainees with the lowest overall growth refute the trainees' perception of their competence. One of the reasons why it is so important to authenticate results of trainees, rather than depend on self-assessment scores alone, is to document learning rather than perceptions. Those that had the highest authenticated distance education scores also had the lowest levels of individual growth, suggesting that the training content may not have been challenging for their level of expertise.

Without a way of documenting competencies as trainees enter a program, trainers cannot develop individualized instruction. At best, trainers would be forced to teach to "the middle." Unfortunately, this is often the case thereby providing training material that is too challenging for some and too simple for others. For example using this model, a trainer could design and deliver individualized instructional sequences to provide the greatest opportunity for growth when confronted with a learner with little to no competency on any of the measurement items, and one that has high levels of competency on most of the items.

This competency model worked well as a trainee self-assessment tool and as a behavioral benchmarking tool (Yeung, Woolcock & Sullivan, 1996). What is not known is the numerically acceptable level for competence. Is a step 4 or 5 acceptable or should participants be at a step 6 or 7? Obviously in HRD, trainers and managers must make judgments on acceptable levels of competence in order to transfer the newly acquired knowledge, skills, and abilities to the work environment. This model can be used to document minimally acceptable levels of competence, competency growth, or a combination of the two.



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Competency-based behavioral models have been used to help adult learners understand their core competencies, and may subsequently increase satisfaction, motivation, learning, and ultimately success in training programs (Drawbaugh, 1972). This study included all three functions as indicated by Burchell and Westmoreland (1999): 1) self-assessment (both at the beginning and end of the training program), 2) development of a learner-centered training program based upon the self-assessment and reflective participation and management of learning, and 3) communication and reflection through the use of feedback given from the results of the self-assessment and evaluation rubric (authentication). The competency-based, behaviorally anchored instrument used in this research provides a credible, transferable, and dependable model for evaluating and authenticating trainee growth (Dooley & Lindner, 2001). Use of anchors to authenticate results overcomes limitations of self-administered rating scales that are typically used to measure perceptions of competencies. This model can serve as an additional tool for HRD managers to measure the quality of training and addresses public and political pressure to explain learning.

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# Human Resource Development Competencies for Effective Performance in a Knowledge-Based Economy: A Study of HRD Professionals in Singapore

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***This paper presents empirical findings of a study conducted to identify the key competencies required by modern HRD professionals to perform effectively in a knowledge-based economy. It also attempted to identify the appropriate training and development strategies used to develop those competencies. It was found that most respondents associated KBE with knowledge management, life-long learning and intellectual assets. The identified key HRD competencies were contrasted with the findings of ASTD's latest study.***

Keywords: HRD Competencies, Knowledge-Based Economy, Singapore

The accelerated phase of transition from "industrial age" to the new "information/digital age" in a knowledge-based economy (KBE) demands new management and human resource development (HRD) competencies of managers in today's competitive and dynamic business environment. KBE has received much attention recently, and many countries, like Singapore, USA, Canada, and Malaysia, are making relevant adjustments in their national policies on economic infrastructure and human resource development in order to cope with the new demands of the KBE.

Why is there so much hype about KBE? Is it like what Greenspan (1998) said, the economy is now different from the past? Knowledge Economy or New Economy/Digital Age has evolved due to the emphasis on the importance of knowledge in the changing business world. In this new millennium, the key to survival is through intellectual capital, and only those with knowledge and information will succeed. In the past, the main sources of wealth were from natural and physical resources. However, in business world today, wealth is determined by intangible assets - knowledge and information (Dunning, 2000). As new business models evolve everyday, having new knowledge and information is essential to remain competitive. Thus, under-skilled employees face difficulties in getting or retaining jobs, and even the highly qualified professionals face challenges now in updating themselves continuously. Therefore, to acquire and update knowledge is critical for survival in today's KBE.

Some people advocate the significance of KBE by attributing it to technological innovations and breakthroughs as well as to the globalization of business. Singapore's Economic Development Board (EDB) thought likewise, referring KBE to two broad trends - globalization of business, and revolution in technology. However, no consensus has yet been reached on the meaning and interpretation of KBE. KBE has been defined as one "that is directly based on the production, distribution and use of knowledge and in formation" (OECD, 1996). Browning and Spencer (2000) mentioned, KBE is a world in which people work with their intellectual assets. Different perspectives on KBE could now be found in the literature.

## Knowledge Based Economy (KBE)

Although there has been much discussion on KBE in the popular media, there is still no consensus among scholars and practitioners regarding its definition and its key features. Dunning (2000) referred KBE "essentially to the increasing importance of knowledge as the source of wealth creation in society". This contrasted to the times when richness was built on ownership of land and raw materials (Solvell& Brinkinshaw, 2000). KBE is also envisaged as one "based on the application of human know-how to everything... (where) more and mo re of the economy's added value will be created by brain rather than brawn" (Ong *et al.*, 1999). Alee (2000) defined KBE as one based on ideas, and infinite resource. Sunoo (1999) stated, "KBE increasingly requires workers who demonstrates basic literacy, occupational skills and winning personality traits". Furthermore, the transition of an industrial economy to KBE was described as the process of "creative destruction" (Chua, 2000). In addition, O'Leary (2000) said that information and speed are the oxygen of New Economy. KBE was also defined as "the product of rapid progress in digital technologies, combined with accelerated economic globalization" (Liikanen, 2000). Sachdev (1998) characterized KBE as rapid technological change, the continuous restructuring of organizations towards higher value-added activities, and changing job requirements. Chase (1997) referred KBE as the new knowledge age "characterized by a global economy in which knowledge is becoming the key resource".

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Most authors agreed that knowledge is the source of competitive advantage in KBE. Bawany (2000) mentioned, "KBE is one in which information and knowledge, rather than material resources, drive business activities while creating key sustainable competitive advantage". As there were different views on KBE, this study aimed to unravel the common views and interpretations of KBE.

*Competencies*

KBE requires knowledgeable workers. Therefore, to be successful in KBE, individuals need to acquire new combinations of skills and competencies (Abell, 2000). Moreover, to perform effectively, they must possess and use appropriately a wide variety of competencies (Dubois, 2000). Spencer *et al.* (1993) defined competency as an underlying characteristic of an individual, causally related to criterion-referenced effective and/or superior performance in a job. Competency is defined as "an underlying characteristic of a person" (Boyatzis, 1982). Individual competencies are the applied skills, knowledge, abilities and behaviors of the organization's workers that are critical to its success. There were many studies on individuals' competencies. One of the significant studies (Boyatzis,1982) aimed to determine characteristics of managers related to effective performance in different management jobs of various organizations, and divided the competencies into different clusters. Boyatzis also did an analysis by sectors and management levels. Competencies in this study were also categorized into different clusters, where the data was analyzed according to different individual contributors like professionals, managers, etc. For instance, the key competency for technical professionals was achievement orientation, which focused on measuring performance. In addition, *LOMA's Competency Dictionary* found that willingness to learn, stress tolerance, initiative, adaptability, multi-tasking and motivating others were important (Anonymous, 2000). In another study by MOHR Development Inc. (Kaydo, 2000), eight competencies were identified with regard to top-performing sales managers.

Studies were also conducted on HRD professionals' competencies (McLagan, 1983; 1989; Rothwell *et al.*, 1996), most of which was sponsored by the ASTD. A recent study used McLagan's (1989) findings as a basis for identifying new competencies in today's workplace (Rothwell *et al.*, 1999). However, this approach was different from the previous studies as the authors attempted to identify the required competencies before grouping them into roles.

In Singapore, increased attention has been drawn recently to the relevant issues of KBE, when government undertook actions to prepare the people for the new age. Singapore's Senior Minister said, "unlike a worker in the repetitive machine-based age, tomorrow's worker must depend more on his own knowledge and skills" (STa, 2000). The Minister of Manpower also emphasized that, "in the new millennium, it is the intellectual capital which will determine the outcome of economic competition"(http://www.gov.sg/mom). To help prepare the workforce for KBE, Singapore Productivity & Standards Board (PSB) launched a nation-wide critical enabling skill training (CREST) program. CREST encompasses seven critical enabling skills targeted at all levels of the workforce - from managers to supervisors and workers. These critical enabling skills were also identified by the ASTD through intensive research. Many countries like Britain, Canada and Japan had endorsed these critical enablers. To assess their relevance for Singapore, these skills were field-tested and confirmed with over 300 organizations here (Sachdev, 1998). With the launch, future training programs are expected to concentrate on developing these skills. Some recent publications have highlighted overall T&D practices as well as HRD strategies in Singapore (Osman-Gani and Tan, 1998; Osman-Gani and Tan, 2000). But KBE issues were not specifically addressed in those articles.

Although much has been said about the KBE, No study has yet been found, especially in the field of HRD that identified critical competencies for effective performance in a KBE. Very little research has been done on how new competencies will affect HRD professionals' job performance. Furthermore, no study was found that has investigated this issue in Asian context. Therefore, a significant research gap exists in this field. This paper attempts to contribute to the literature by bridging this research gap. As KBE issues are increasingly surfacing among companies in Singapore, empirical information on this is in high demand from managers and HRD professionals. This paper presents some empirical findings of a study conducted to identify the key competencies required by modern managers and HRD professionals for effective performance in KBE. The study also attempted to identify the appropriate training and development strategies used to develop those competencies.

**Research Questions**

In order to address the above objectives, the following research questions are formulated:

1) What are the key features of a KBE?
2) What key competencies are required from HRD professionals for effective performance in a KBE?

3) Are there significant differences among the respondents' views by their company size, business sectors, and types of ownership?
4) What types of training programs are appropriate for developing the HRD competencies in a KBE?
5) What training delivery methods should be used for developing the HRD competencies in a KBE?

**Research Methodology**

This study was conducted using an exploratory field design method. A two-pronged approach consisting of interviews and survey were used to gather primary data. It was conducted in collaboration with Singapore Training and Development association (STADA). As an institutional member of ASTD (American Society for Training & Development), STADA provides T&D services to its members, consisting mainly of HRD professionals working in diverse industrial sectors of Singapore. It is the only local HRD professional body, which offers professional development programs (e.g. Diploma in Strategic HRD). The study was targeted at Singapore-based companies' HR managers and practitioners. The sample size consisted of 700 HRD professionals randomly selected from STADA's membership database. The respondents were General/Administrative Managers, HR managers/professionals working in MNCs and local companies. Besides the primary data, secondary information was also gathered from published materials. Prior to the survey, intensive face-to-face interviews were conducted with eight HRD professionals from different industrial sectors in order to gather their first hand views on the relevant aspects of KBE, which were useful in drafting the questionnaire. Together with the findings from the literature review, the interview findings were incorporated into the survey instrument development. The questionnaire was divided into several parts: features of KBE, general management competencies (Boyatzis,1982; and Page *et al.* 1994), HRD competencies (McLagan, 1989; Brock *et al.*, 1996; Piskurich and Sanders, 1998; Rothwell *et al.*, 1999), and T&D strategies (O'Connor *et al.*, 1996; Noe, 2000). The other two parts consisted of: (a) company information, (b) demographic information of respondents. A five-point Likert-type interval scale was used to collect the response data. Pilot testing of the questionnaire was done during a regional HRD Conference where 60 copies of the draft questionnaires were distributed to the delegates. The feedback were then compiled and incorporated into the final questionnaire. A panel of experts comprising of STADA's training professionals and the professors of NTU was used in order to test for the content and face validity of the questionnaire. A test-retest method was used to test for the reliability of the instrument. The questionnaires with cover letters and self-addressed envelopes were sent out via local mail to the sample STADA members. Some questionnaires were also sent through e-mails as attachment files. Due to the initial low response rate, two rounds of follow-up emails were sent out. In order to achieve a higher response rate, incentives such as a small gift bag was promised for prompt and complete responses. Subsequently, three rounds of additional follow-up calls were made by the STADA personnel. Personal administration of the questionnaires to selected HRD professionals were also made. The returned questionnaires were checked for completeness and consistency before data analysis. The collected data were compiled into a database using the Statistics Package for Social Science (SPSS). Descriptive and multivariate statistics were computed and frequency tables were generated for responding to the research questions.

**Results and Discussions**

*Profiles of Respondents*

A total of 100 completed responses were obtained, providing a response rate of 14.3%. The responses represented eight different business sectors, with the primary areas being, management consultancy (25%), manufacturing (23%), finance and business services (FBS) (12%), transport and communication (T&C) (12%). The companies were reclassified into MNCs and local companies, and most of the respondents (63%) were from the local companies. The respondents represented organizations of varying sizes: most companies (51%) had more than 200 employees. In terms of the demographic characteristics of the respondents, majority (55%) of the respondents was found to be less than 40 years of age, and about 53% of the respondents had at least 15 years of job experience. With regard to their HRD experience, majority (69%) had at least five years of experience. A large majority of respondents (83%) had at least a bachelor degree, and most respondents (70%) held positions of senior and middle management levels. The gender composition of the respondents was well balanced (48% female; 52% male).

*Research question 1: What are the Key Features of a KBE?*

The responding managers' views on the interpretation and key features of KBE were identified. The descriptive statistics are presented in Table-1. The top five key features of KBE are found to be: (a) knowledge management, (b)

lifelong learning, (c) "KBE is a world in which people work with their intellectual assets", (d) "KBE involves the changing of people's mindsets" and (e) "KBE involves rapid change".

Knowledge management was rated very highly as a key feature of KBE, which is consistent with the findings of the literature review. Knowledge management is about encouraging people to share knowledge and ideas to create value-adding products and services (Chase, 1997). Therefore, it is critical that companies manage knowledge efficiently by sharing the new knowledge among its members in order to be successful in a KBE. In addition, "life-long learning" and "working with intellectual assets" were also highly rated by the respondents. People have to constantly upgrade themselves and learn to gain 'updated' knowledge so that they do not become 'obsolete' in today's competitive business world. This view might have been further influenced by Singapore leaders' recent emphasis on life-long learning. The above findings have significant implications for today's HRD professionals.

*Research Question 2: What Key Competencies Are Required From a HRD Professional for Effective Performance in a KBE?*

In order to identify the key competencies of a modern HRD professional in a KBE, descriptive analysis was conducted, and the results are presented in Table-2. The top five competencies for HRD professionals are found to be: (a) adaptability to changes (mean=4.66), (b) ability to see "big" picture (mean=4.64), (c) communication skills (mean=4.56), (d) visioning skills (mean=4.54) and (e) knowledge of own strengths and weakness (mean=4.48).

Among the top ten competencies identified through this study, five competencies were found to be similar with Rothwell *et al.* (1999) findings, although the top competency was not found in Rothwell's list (see Table-3). Adaptability to changes was identified as the top HRD competency. It may be due to the impacts of rapid changes occurring among organizations in the KBE, which HRD professionals have to continuously deal with. In Singapore, workforce is getting increasingly diverse and more educated (STc, 2001). Corporate restructuring and downsizing is becoming a common phenomenon. Increased usage of IT and Internet in offices is also very evident today. All these could affect the training methods and its composition. These trends were not limited to Singapore only. ASTD had also identified some of these trends that would affect the nature and scope of HRD (Rothwell *et al*, 1999). Some of these competencies identified were from the interpersonal grouping. The importance of such competencies was

Table-3: *Comparative Analysis Among Current and Rothwell's (1999) Findings.*

| Rank | Current Findings (KBE) | Rank | Rothwell *et al*., (1999) findings |
|---|---|---|---|
| 1 | **Adaptability to changes | 1 | *Leadership (Leadership competencies) |
| 2 | *Ability to see "big picture" (Business competencies) | 2 | Analytical thinking (Analytical competencies) |
| 3 | *Communication Skills (Interpersonal Competencies) | 3 | *Communication (Interpersonal competencies) |
| 4 | Visioning skills (Leadership competencies) | 4 | Competency Identification (Analytical competencies) |
| 5 | **Knowledge of own strengths and weakness | 5 | *Interpersonal Relationship Building (Interpersonal competencies) |
| 6 | **Creative thinking skills | 6 | *Performance Gap analysis (Analytical competencies) |
| 7 | *Relationship building skills (Interpersonal competencies) | 7 | Intervention Selection (Analytical competencies) |
| 8 | *Leadership Skills (Leadership competencies) | 8 | Identification of Critical Business Skills (Business competencies) |
| 9 | Consulting skills (Interpersonal competencies) | 9 | Facilitation (Technical competencies) |
| 10 | *#Understanding of improvement in human performance (Analytical competencies) | 10 | *Ability to see "big picture" (Business competencies) |

* Common competencies in current & Rothwell's findings
** Not listed in Rothwell *et al.*, (1999)
# Simplified meaning of performance gap analysis



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evident in Rothwell's (1999) study. It could be because HRD professionals are primarily service providers. They need to have constant interaction with the employees to assess, understand and evaluate the training needs of the organization. This involves the building of trust and rapport through communication and relationship building.

Another key HRD competency identified by the respondents was the ability to see "big picture". To survive in today's competitive global business environment, an organization has to break away from its conventional thinking boundaries and strategies. Thus HRD professionals would need to expand their horizon and focus beyond their own organization and should identify the trends that would help in making relevant decisions for developing employee skills. They would also need the ability to analyze the differences observed between the expected and actual performance of the employee. Hence, the analytical competency, performance gap analysis, arises. In this study, these have been rephrased into understanding of improvements in human performance.

The respondents also reported a need for leadership competency (i.e. leadership and visionary skills), which is in line with the findings of other studies. This is due to the expected changes from the traditional roles of HRD professionals. Recently, an idea has emerged that HRD professionals need to be organizational leaders so as to work with senior management as advisors/partners and get them to understand the advantages of HRD. To do so, they will need to be able to project trends and visualize possible and potential future performance scenario and its implications (McLagan, 1989). They must also be able to creatively think of the ways to influence the organization (Rothwell *et al*, 1999). Hence, creative thinking skills were needed, for example using innovative methods of training.

Another competency not listed in Rothwell's study was "knowledge of own strengths and weakness" (mean=4.48). As the saying goes, "know yourself, know your enemy", the respondents felt that in order to be able to meet any challenges ahead, they would have to know themselves thoroughly. This was to ensure that their strengths could be put into good use and fully utilized to overcome the shortcomings in order to help the organization in gearing up for the challenges of KBE.

*Research Question 3: Are there Significant Differences Among the Respondents' Views By Their Company Size, Business Sectors, and Types of Ownership?*

Comparative analyses were conducted on the data using the ANOVA procedures to identify the significant differences existed among the responses of managers from various business sectors, sizes, and ownership structures. No significant differences were found among various business sectors. This could because the emergence of KBE affects the whole business community irrespective of the sectors they belong to. However, statistically significant difference was found in one feature: globalization, where local companies reported a higher mean than foreign companies. This may be because globalization has a greater impact on local companies than MNCs, due to the extent of their international experience. In terms of company size, significant differences were also found in two features: globalization and information technology. Large companies had higher means in both features. This could be because large companies are more likely to expand globally and invest more on information technology. Hence, the effects felt would be greater than small companies.

Comparative analyses were also conducted to identify the nature of statistical significance existing among the responses by the above mentioned categories. Significant differences were found among the respondents from various business sectors on the key HRD competencies. Each industry had its own distinct characteristics and training requirements would have to be adjusted accordingly to suit the industry. Thus HRD professionals would need to have different levels of each competency. For example, for T&D methods application, those in financial and business services (FBS) and commerce sectors reported the lowest means among the sectors. This could be because in these sectors, more emphasis on job-related knowledge was needed. For these two types of industries, law and regulations govern their operating framework, like Bank Regulation Act. Thus the employees were trained in these guidelines to ensure adherence to them. A major portion of the training would be more "fixed" in nature, leaving less room to apply different T&D methods. Hence, it also explained why the means for creative thinking skills, one of the key competencies, for these two industries were among the lowest.

Among the 11 competencies where significant differences were found, four were among the top competencies identified in this study. For adaptability to changes, ability to see "big picture" and understanding of improvement in human performance, consultancy sector reported the highest mean compared to other sectors. This may be because of their competitive nature of jobs, as they need to be flexible and be able to identify imp ortant trends, advise and assist their clients on T&D. Significant differences were also found among MNCs and local companies in two competencies. For understanding of industry, the local-owned companies' respondents reported a higher mean than those from foreign- owned companies. This difference could be due to the globalization effects brought about by KBE. Locally owned companies' respondents would have to understand the whole industry thoroughly, considering



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the similar industries beyond Singapore's geographical boundaries. Whereas for the foreign-owned companies, such understanding would have already been incorporated.

As for ethics modeling, locally owned companies also reported a higher mean. This could be because the foreign owned companies operated in different countries, and the standard of ethics varied. What was considered as ethical in one country may not be so in another. Whereas, for local-owned companies especially in Singapore, business ethics is very important and of less varying standards as they were confined only to Singapore. ANOVA results showed that no significant differences existed between small and big companies and among different job experience categories of respondents.

Significant differences were found among respondents' views by their management levels in two competencies: questioning skills and performance observation skills. Senior managers reported higher importance for both competencies than those in other levels of management. This may be due to different levels of management's work nature. Questioning skills were important to senior managers because they would have to question their subordinates frequently to know the mechanics of daily operations. The need for questioning skills decreases as the level of management decrease. Senior managers also reported a higher mean for performance observation skills than other management levels. Managers need this competency to observe their subordinates' performance, assess and reward them accordingly. Senior managers have to apprais e their subordinates' performance regularly. The frequency and importance of appraising task seems to be much more among senior managers than that of middle managers. By HRD experience of managers, significant differences were obtained in one competency: technological awareness and understanding. Respondents with HRD experience of over 20 years reported a higher mean compared to the others. This could be because senior people felt the need for learning and updating their technological skills much more than the younger HRD professionals. (All tables with the ANOVA results will be provided later)

*Research Question 4: What Types of Training Programs are Appropriate for Developing the HRD Competencies in a KBE?*

The results indicated the importance/appropriateness of the following five training programs: (a) communication skill courses (mean=4.35), (b) lateral thinking courses (mean=4.34), (c) attitude training (mean=4.33), (d) team building courses (mean=4.33) and (e) problem solving courses (mean=4.33), and management skills training (mean=4.33).

Table 4. *Training Programs for Developing HRD Competencies in a KBE*

| *Training Programs* | N | Mean* | Std. Deviation |
|---|---|---|---|
| Communication skills courses | 100 | 4.35 | 0.63 |
| Lateral thinking courses | 100 | 4.34 | 0.64 |
| Attitude training | 100 | 4.33 | 0.73 |
| Team building courses | 100 | 4.33 | 0.68 |
| Problem solving courses | 100 | 4.33 | 0.67 |
| Management skills training | 100 | 4.33 | 0.60 |
| Knowledge sharing courses | 100 | 4.28 | 0.68 |
| OD training | 100 | 4.24 | 0.65 |
| Situational leadership training | 100 | 4.12 | 0.70 |
| Motivational training | 100 | 4.12 | 0.79 |
| IT courses | 100 | 3.91 | 0.71 |
| Product training | 100 | 3.69 | 0.87 |

* (1= Least appropriate, ..... 5= Most appropriate)

From the above findings it may be concluded that HRD professionals highly emphasize training on communication skills, creative thinking skills, problem-solving skills and management skills. Among these, communication skills and creative thinking skills were identified as key competencies that are considered to be crucial for effective performance in a KBE.

*Research Question 5: What Training Delivery Methods Should be Used for Developing the HRD Competencies in a KBE?*

The five most effective training delivery methods identified were: (a) OJT (mean=4.38), (b) games and simulation (mean=4.12), (c) adventure/outdoor learning (mean=3.96), (d) role play/interaction (mean=3.91) and (e) discussion and report (mean=3.85).



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Table-5: *Effective Training Delivery Methods for Developing HRD Competencies*

| Training delivery methods | N | Mean* | Std. Deviation |
|---|---|---|---|
| On-the-job training | 100 | 4.38 | 0.71 |
| Games and simulation | 100 | 4.12 | 0.79 |
| Adventure/outdoor learning | 100 | 3.96 | 0.83 |
| Role play/Interaction | 100 | 3.91 | 0.77 |
| Discussion and report | 100 | 3.85 | 0.72 |
| Case study/video system | 100 | 3.73 | 0.81 |
| Vestibule training | 100 | 3.61 | 0.74 |
| Web based learning | 100 | 3.54 | 0.96 |
| Audio Visual conferencing | 100 | 3.37 | 0.94 |
| Self-instructional training modules | 100 | 3.32 | 0.91 |
| Lecture/classroom training | 100 | 3.14 | 0.97 |

*(1= Least effective, ..... 5= Most effective)

The finding that OJT was considered the most effective training delivery method was not surprising as most Singapore organizations conduct their training on-the-job due to the strong encouragement from the government (Jacobs & Osman-Gani, 1999). In this context, the great success of Singapore's OJT21 program should be mentioned. Moreover, it was less costly and less time consuming. Games and simulation, adventure/outdoor learning and role play/interaction were rated highly as they were found to be very effective in developing creativity, managerial skills, communication skills and teamwork. These were found to be essential features of HRD competencies in a KBE.

**Conclusions and Recommendations**

As far as we know, this is the first study in Singapore that sought to identify competencies required by managers and HRD professionals for effective performance in a KBE. In other countries of America (McLagan 1989; Rothwell 1999, etc.), and Europe (Van Ginkel *et al.* 1994; Nijhof *et al.* 1997 etc.), studies have been done to identify relevant competency models.

This study identified some key features of KBE, which includes knowledge management, life-long learning, usage of intellectual asset, managing rapid changes, etc. Dealing with all these issues requires a paradigm shift from the conventional way of thinking. It is not surprising to find that adaptability to changes was ranked as the top factor in both sets of competencies (general management and HRD) in a rapidly changing economy (KBE).

Some competencies like relationship building identified in the past by McLagan (1989) are still regarded as highly important by the respondents. Therefore, regardless of the changes taking place in the new economy, some generic/core competencies are still necessary for HRD professionals. On the other hand it was also observed that some competencies that were once not regarded as core competencies, are considered to be increasingly becoming significant now such as, visioning skills and self-knowledge acquisition. Furthermore, communication skills is also of foremost importance in the competency ranking. As HRD professionals' work involves people management and skills development, being able to liaise, coordinate and communicate effectively with people will make them more successful in their job. That is why communication skills courses were considered to be the most appropriate training program by the respondents. In addition, courses focusing on team-building skills and creative thinking are highly regarded as important, and such skills are crucial for survival and growth to in today's competitive world.

In the next era, knowledge will be a source of competitive advantage for all organizations. HRD professionals will have to face the challenge of linking competencies and resources to create such advantage (Hodgetts *et al.*, 1999). Further integration of HRD with information technology will also be expected and will gradually transform into eHR. As a result, HRD professionals will need to balance between business strategy, HR mastery and technology (Ulrich, 2000)

As an exploratory study, findings of this research will help HRD scholars and professionals to better understand and reflect on the need for new competencies in a new KBE. The empirical information of this study could be useful in planning for future studies in this area. Also, the information would be useful to the practitioners in making appropriate decisions in the areas of training and employee development, recruitment and selection and in other relevant areas of professional practice. More works need to be done to uncover the underlying dimensions of the findings, such as the underlying causes for differences in perception among various industries, company size, ownership etc, which were not explored in details in this study. Future research may include more management and HRD variables, (such as career development, organization development, etc), to provide more comprehensive coverage of HRD competency study.



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This study may be replicated in other countries of the region in order to identify the nature of similarities or differences with these findings, which would contribute to the development of an Asian model that might be different than the HRD competency models developed in Europe and America.

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